

**CLAIMS:**

1. An interface forming method comprising:  
forming a first layer comprising a first chemical element;  
chemisorbing on the first layer an interface layer comprising at least one monolayer of the first chemical element intermixed with a second chemical element different from the first chemical element; and  
forming a second layer comprising the second chemical element on the interface layer.
2. The method of claim 1 wherein the first layer does not substantially comprise the second chemical element.
3. The method of claim 2 wherein the second layer does not substantially comprise the first chemical element.
4. The method of claim 1 wherein the second layer does not substantially comprise the first chemical element.
5. The method of claim 1 wherein the first layer is conductive and the second layer is insulative.

6. The method of claim 1 wherein the first layer comprises a metal other than Ta and the second layer comprises  $Ta_2O_5$ .

7. The method of claim 6 wherein the metal comprises Pt.

8. An electronic device interface forming method comprising forming an interface layer between and in contact with a first layer comprising a first chemical element and a second layer comprising a second chemical element different from the first chemical element, the interface layer being formed separately from forming the first and second layers, comprising the first and second chemical elements, and not substantially comprising material from the first or second layers as separately formed.

9. The method of claim 8 wherein the first layer does not substantially comprise the second chemical element.

10. The method of claim 9 wherein the second layer does not substantially comprise the first chemical element.

11. The method of claim 8 wherein the second layer does not substantially comprise the first chemical element.

12. The method of claim 8 wherein the interface layer comprises at least one monolayer of intermixed first and second chemical elements chemisorbed on the first layer.

13. An electronic device interface forming method comprising:  
forming a first layer comprising a first chemical element;  
chemisorbing a first portion of at least one monolayer over the first layer, the first portion comprising the first chemical element;  
chemisorbing a second portion of the at least one monolayer over the first layer, the second portion comprising a second chemical element different from the first chemical element and the first and second portions of the at least one monolayer being comprised by an interface layer; and  
forming a second layer comprising the second chemical element on the interface layer.

14. The method of claim 13 wherein the first layer does not substantially comprise the second chemical element.

15. The method of claim 14 wherein the second layer does not substantially comprise the first chemical element.

16. The method of claim 13 wherein the second layer does not substantially comprise the first chemical element.

17. The method of claim 13 wherein the first portion of the at least one monolayer is chemisorbed on first parts of the first layer and the second portion of the at least one monolayer is chemisorbed on second parts of the first layer.

18. An electronic device interface forming method comprising:  
forming a first device layer comprising a first chemical element;  
chemisorbing a first unsaturated interface layer comprising the first chemical element on the first device layer, the first interface layer having a thickness of from about 1 to about 10 monolayers;  
chemisorbing a second unsaturated interface layer at least on the first device layer in areas not saturated by the first interface layer, the second interface layer comprising a second chemical element different from the first chemical element and having a thickness of from about 1 to about 10 monolayers; and  
forming a second device layer comprising the second chemical element on the first and second interface layers.

19. The method of claim 18 wherein the first layer does not substantially comprise the second chemical element.

20. The method of claim 19 wherein the second layer does not substantially comprise the first chemical element.

21. The method of claim 18 wherein the second layer does not substantially comprise the first chemical element.

22. An apparatus comprising:

a first layer comprising a first chemical element;

an interface layer chemisorbed on the first layer, the interface layer comprising at least one monolayer of the first chemical element intermixed with a second chemical element different from the first chemical element; and

a second layer comprising the second chemical element on the interface layer.

23. The apparatus of claim 22 wherein the first layer does not substantially comprise the second chemical element.

24. The apparatus of claim 23 wherein the second layer does not substantially comprise the first chemical element.

25. The apparatus of claim 22 wherein the second layer does not substantially comprise the first chemical element.

26. The apparatus of claim 22 wherein the first layer is conductive and the second layer is insulative.

27. The apparatus of claim 22 wherein the first layer comprises a metal other than Ta and the second layer comprises  $Ta_2O_5$ .

28. The apparatus of claim 27 wherein the metal comprises Pt.

29. An electronic device comprising:

a first layer comprising a first chemical element;

a second layer comprising a second chemical element different from the first chemical element; and

an interface layer between and in contact with the first and second layers, the interface layer comprising the first and second chemical elements and not substantially comprising material originating from the first or second layers.

30. The device of claim 29 wherein the first layer does not substantially comprise the second chemical element.

31. The device of claim 30 wherein the second layer does not substantially comprise the first chemical element.

32. The device of claim 29 wherein the second layer does not substantially comprise the first chemical element.

33. The device of claim 29 wherein the interface layer comprises at least one monolayer of intermixed first and second chemical elements chemisorbed on the first layer.

34. An electronic device comprising:

- a first layer comprising a first chemical element;
- a first portion of at least one monolayer chemisorbed on the first layer, the first portion comprising the first chemical element;
- a second portion of the at least one monolayer chemisorbed on the first layer, the second portion comprising a second chemical element different from the first chemical element;
- an interface layer comprising the first and second portions of the at least one monolayer; and
- a second layer comprising the second chemical element on the interface layer.

35. The device of claim 34 wherein the first layer does not substantially comprise the second chemical element.

36. The device of claim 35 wherein the second layer does not substantially comprise the first chemical element.

37. The device of claim 34 wherein the second layer does not substantially comprise the first chemical element.

38. The device of claim 34 wherein the first portion of the at least one monolayer is chemisorbed on first parts of the first layer and the second portion of the at least one monolayer is chemisorbed on second parts of the first layer.

39. The device of claim 34 wherein the at least one monolayer comprises from about 1 to about 10 monolayers.